



The effect of improvement of nursing services and information technology courses: Perspective of nursing and midwifery students

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Article Info	ABSTRACT
<p>Article type: Research</p> <hr/> <p>Article History: Received: 2025-04-10 Accepted: 2025-05-05 Published: 2025-05-13</p> <hr/> <p>* Corresponding author: Mohammad Reza Mazaheri Habibi</p> <p>Department of Health Information Technology, Varastegan Institute for Medical Sciences, Mashhad, Iran</p> <p>Email: Mazaherim@Varastegan.ac.ir</p> <hr/> <p>Keywords: Information Technology Education Nursing School Midwifery Curriculum Health Policy</p>	<p>Introduction: Considering the changes in the health system and the use of information technology in health in the world, especially in developing countries, and the electronification of patients' medical records, it seems necessary to compile information technology courses in the curriculum and accurately record information. The purpose of this study was to investigate the role of information technology courses during the internship from the point of view of nursing and midwifery students in Mashhad.</p> <p>Material and Methods: This descriptive cross-sectional study was conducted on nursing and midwifery students during their internship by a researcher-made questionnaire in 2023. The validity of the questionnaire was tested by faculty members and its reliability was (Cronbach's alpha=94%). This questionnaire contained 22 items, including how to teach information technology (5 questions), the effectiveness of this course in the workplace (11 questions), and plans for future use (6 questions). The available sampling method was used. Descriptive statistics were used to analyze the data.</p> <p>Results: In total, 216 participants including 75% women and 25% men answered this questionnaire. The majority of students stated that the information technology course was presented practically and the contents taught in this course were on the topics of the Ministry of Health.</p> <p>Conclusion: According to the results, it seems that there is a need to provide a more practical information technology course for nursing and midwifery students. As well as more units should be allocated so that nurses and midwives can skillfully use electronic information sources and accurately record information.</p>

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INTRODUCTION

To respond to the information needs of medical and paramedical science specialists with technological advances in the field of information, the desire to use information technology (IT) has increased for specialists in this field to be aware of current scientific information and solve clinical problems, treatment, education and research [1]. The application of information technology in the health

system has significant advantages for the professionals providing health services, including increasing access to information and up-to-date resources of medical sciences [2]. Today, healthcare organizations around the world have implemented information technology to improve effectiveness, efficiency, and patient safety [3-6]. On the other hand, not having a specific purpose for using new technology, satisfaction with the apparent entry of technologies, and insufficient recognition of the

capabilities of information technology are mentioned as its weaknesses [7, 8]. Nursing and midwifery play one of the most important roles in all health care that is affected by information technology [9]. Information technology supports traditional and advanced nursing and midwifery practices in all fields [10]. Care and technology should be used to help manage actions and process nursing and midwifery data [11].

In addition, digitalization has led to the development of methods that provide opportunities for nurses to monitor patients at home [12-14]. The review of studies showed that factors such as the impracticality of nursing research, not having enough time, and the lack of support from the healthcare organization were the main obstacles to not using up-to-date information sources among nurses [15, 16].

Furthermore, studies in the field of education showed that nursing students in developing countries still lack the necessary training to use new information systems to access the required information and in general information literacy training [17].

In nursing and midwifery education, information technology education is included in the curriculum of these students to empower the students of these two fields. Some studies reported that the use of computer information resources will increase with the increase of nurses' computer skills [18]. Considering the changes in the field of nursing, it is expected that the ability of nursing and midwifery students has increased in accessing the best clinical information and the opportunity to use research-based information in clinical decisions. Therefore, the purpose of this study is to investigate the role of the information technology course during the internship from the point of view of nursing and midwifery students in Mashhad.

MATERIAL AND METHODS

Study design and participants

This descriptive cross-sectional study was conducted in 2023. After the description of the research, the participants entered the study with informed consent. All people's information has been used anonymously and confidentially.

Data collection instruments

A questionnaire was designed by the research team of this study to investigate the role of the information technology course during the internship from the point of view of nursing and midwifery students. First, a questionnaire was designed containing two columns, the first column containing the names of the information elements and the second column the degree of importance of each information element

based on a five-point Likert scale (1 to 5); Scale 1 indicates very high importance, scale 2 indicates high importance, scale 3 indicates moderate importance, scale 4 indicates low importance, and scale 5 indicates very low importance. The face validity of the questionnaire was tested by 9 faculty members of Varastegan institute for medical sciences, and its reliability was measured using the test-retest method (Cronbach's $\alpha=0.94$). This questionnaire contained 22 questions including how to teach information technology (5 questions), the effectiveness of this course in the workplace (11 questions), and plans for future use (6 questions). This questionnaire was designed electronically and sent to the participants.

Intervention

This study was conducted among nursing and midwifery students of Mashhad Medical Sciences. Initially, an advertisement was sent to all nursing and midwifery students, and they were invited to participate in the study by stating the goals and objectives of the study. They were asked to give their consent if they were willing to participate in the research. This stage lasted for 2 weeks. Then, 216 participants were randomly selected among the volunteers, and an online meeting was held to clarify the research goals and work steps, and the questions and ambiguities of the individuals were answered. Then, after receiving the participants' consent, an electronic questionnaire was sent to them and they were asked to answer all the questions in the questionnaire and send it to us within a maximum of 1 month. After receiving all the questionnaires, statistical analysis was performed.

Data analysis

Data were entered in SPSS version 19 software. Standard deviation and mean were used to describe continuous variables, and percentage and frequency were used to analyze descriptive data.

RESULTS

A total of 216 participants responded to this questionnaire (response rate: 100%), which included 162 women and 54 men. According to Table 1, the majority of students stated that the information technology course was presented practically and the contents taught in this course were on the topics of the Ministry of Health. Moreover, more than half of the students stated that the material presented in this course was useful (61%) and the professor's teaching method was satisfactory (59%). Almost half of the people believed that this lesson is useful in other subjects as well (52%). According to Table 2, the majority of students stated that the information technology course was necessary during the internship (65%) and the material taught in this

course was used (61%).

In addition, 125 people believed that information technology knowledge is effective for working in medical centers, and 181 people believed that this course is useful in completing cases effectively. 162 people also stated that this course has improved their IT knowledge (75%). In general, 149 people expressed their satisfaction with the presentation of this course (69%) and almost half of the people believed that this course made them interested in IT.

Table 3 includes the opinions and views of the students of these two majors regarding the

improvement of IT teaching in the future. A small number of students believed that the number of theory units in this course should be increased (31%), while the majority of people believed that the number of practical units in this course should be increased (72%). According to Table 3, 102 people felt the need to increase computer skills, 158 people felt the need to increase information technology skills, and 123 people felt the need to participate in the workshop. Finally, a significant number of Students said that increasing their IT skills would improve their job status (77%).

Table 1: The results of examining the views of nursing and midwifery students regarding the teaching of information technology during the period of study

Questions	Very High n (%)	High n (%)	Medium n (%)	Low n (%)	Very Low n (%)
The information technology course is presented in a practical way	2 (1)	39 (18)	123 (57)	43 (20)	9 (4)
The material taught in this lesson was according to the Ministry of Health's heading.	59 (27)	97 (45)	54 (25)	6 (3)	0 (0)
The material taught in this lesson has been useful for me.	48 (22)	84 (39)	65 (30)	15 (7)	4 (2)
In my opinion, the professor's teaching method was satisfactory.	52 (24)	76 (35)	69 (32)	17 (8)	2 (1)
In my opinion, the information technology course was used in other courses.	34 (16)	78 (36)	76 (35)	19 (9)	9 (4)

Table 2: The results of examining the views of nursing and midwifery students regarding the effectiveness of the information technology course during the academic period

Questions	Very High n (%)	High n (%)	Medium n (%)	Low n (%)	Very Low n (%)
From my point of view, the IT course is necessary during my studies.	63 (29)	78 (36)	13 (6)	60 (28)	2 (1)
The material taught in this lesson has been used during homework.	61 (28)	71 (33)	61 (28)	19 (9)	4 (2)
In my opinion, having information technology knowledge is effective for working in medical centers.	45 (21)	80 (37)	72 (33)	15 (7)	4 (2)
In my opinion, the information technology course is used in the effective completion of cases.	114 (53)	67 (31)	32 (15)	2 (1)	0 (0)
In this lesson, my teacher had the necessary knowledge in the field of information technology.	63 (29)	69 (32)	69 (32)	13 (6)	2 (1)
In this lesson, my teacher was aware of the use of information technology in treatment centers.	89 (41)	73 (34)	48 (22)	4 (2)	4 (2)
In this course, my professor had the experience of providing midwifery and nursing services in medical centers.	114 (53)	65 (30)	28 (13)	9 (4)	0 (0)
The IT course improved my computer knowledge.	48 (22)	50 (23)	76 (35)	25 (12)	17 (8)
The IT course improved my IT knowledge.	104 (48)	58 (27)	39 (18)	13 (6)	2 (1)
In general, I am satisfied with the presentation of this lesson.	86 (40)	63 (29)	54 (25)	6 (3)	6 (3)
This course made me interested in information technology.	47 (22)	63 (29)	69 (32)	22 (10)	15 (7)

Table 3: The results of examining the opinions of nursing and midwifery students regarding the improvement of health information technology teaching in the future.

Questions	Very High n (%)	High n (%)	Medium n (%)	Low n (%)	Very Low n (%)
In my opinion, the number of theory units in this course should be increased.	30 (14)	37 (17)	60 (28)	35 (16)	54 (25)
In my opinion, the number of practical units in this course should be increased.	125 (58)	30 (14)	41 (19)	11 (5)	9 (4)
Passing this course made me feel the need to increase my computer skills.	57 (26)	45 (21)	58 (27)	30 (14)	26 (12)
Passing this course made me feel the need to increase my IT skills.	119 (55)	39 (18)	43 (20)	11 (5)	4 (2)
Passing this lesson made me feel the need to participate in the workshop.	67 (31)	56 (26)	61 (28)	15 (7)	17 (8)
I believe that increasing my information technology skills will improve my job status.	121 (56)	45 (21)	41 (19)	0 (0)	9 (4)

DISCUSSION

Considering the electronification of patient records in hospitals and the importance of accurate information recording by medical staff, if there is an effective role of information technology course during internship, it is necessary to present this course more practical and applicable way for nursing and midwifery students. Moreover, to improve the IT skills of nursing and midwifery students, there is a need to revise this lesson in the educational curriculum. Therefore, this study was conducted to investigate the role of information technology courses during the internship from the point of view of nursing and midwifery students in Mashhad. The findings of the current research showed that 47% of students much and very much need to increase their computer skills, 73% of people much and very much need to increase their information technology skills, and also 57% of the participants need much and very much to attend in the workshop. In this regard, in a study conducted by Eley et al. to investigate the current knowledge and future educational requirements of nurses in the field of IT and computers, almost half of the participants stated that to better meet the needs of IT and computers, need more training in their jobs [19]. Likewise, another study aimed at investigating nurses' perceptions of the use of computer technology and understanding the meaning of this technological change in nurses' work was conducted by Tsarfati et al. They stated that since nurses are the first line of treatment in emergencies, Therefore, there is a need for sustainable education and tools for identification and treatment to become part of the curriculum of future nurses [20]. Besides, 61% of the participants stated very much that the material taught in this course was used during their internship. In that case, in another study conducted by Eley et al. to determine the current use of IT by nurses and its obstacles, they stated that 86% of the respondents used computers at work [21]. In addition, this study showed that the majority of

people are very satisfied with the presentation of this course (69%).

Similarly, in a study conducted by Singh et al. to investigate nursing students' views on the use of IT in nursing education, most people had a positive attitude towards IT [22]. In a study conducted by Zayim et al., nursing students also showed positive opinions about IT [23]. This study provides valuable insights regarding the existing need for the application of information technology courses during internships at universities and educational centers. However, this study had some limitations. First, since students choose to enter the study based on their own will, there may be bias in the selection of samples. Additionally, considering that this study was conducted only among undergraduate students, as a result, the number of available samples was limited. According to the profession of nurses and midwives and their high workload, face-to-face training is undoubtedly challenging for them. Within this context, previous studies have proven the effectiveness of technology-based education, including the use of virtual reality technology, artificial intelligence, and telemedicine, due to its comprehensive and easy access, and cost-effectiveness [24-32]. Due to the increasing growth of digital technology, more studies are suggested for the effect of using other technologies, including simulation-based learning and its application in nursing education.

CONCLUSION

According to the results of the present study, it seems that there is a need to present the information technology course more practical and applicable way for nursing and midwifery students, and there is also a need for the practical presentation of the information technology course by most of the respondents (72%). In addition, the results indicate that the presentation of this course is very prominent in acquiring the skill of completing the patient's

record. 73% of the answers were about paying more attention to this subject in the educational curriculum and assigning more units due to its high applicability during the internship.

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AUTHOR'S CONTRIBUTION

NE: Conceptualization, data curation, investigation, writing the original draft, review and editing; AK: Formal analysis, methodology, validation, writing the original draft; KG: Formal analysis, methodology, software, writing the original draft; SAFA: Conceptualization, data curation, supervision, writing the original draft, review and editing; HM: Resources, visualization, writing the original draft; MRMH: Conceptualization, methodology, validation, writing the original draft, review and editing.

All authors have provided final approval of the version submitted.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest regarding the publication of this study.

ETHICAL APPROVAL

All methods were carried out in accordance with relevant guidelines and regulations. The study has been approved in ethical committee of the ethical committee of Mashhad University of Medical Sciences (approval number IR.MUMS.REC.1402.123). In this study the Informed consent was obtained from all individual participants.

FINANCIAL DISCLOSURE

No financial interests related to the material of this manuscript have been declared.

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